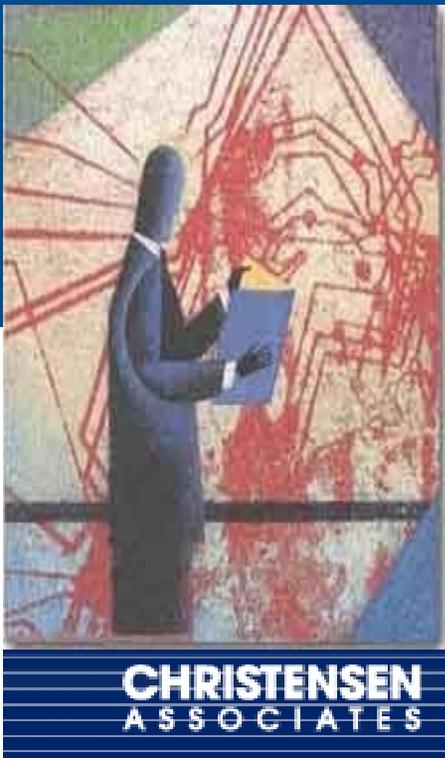


# Study of Competition in the Railroad Industry and Analysis of Proposals to Enhance Competition

## June 2008 Progress Report



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*June 2008*

# Outline

- ❑ Project background
- ❑ Project requirements and timeline
- ❑ What we have done
  - Qualitative research
  - Quantitative research
- ❑ What we are doing
  - And where we are going

# Project Background

- ❑ *From GAO Report* – Are recent rate increases the result of capacity constraints or exercise of market power?
- ❑ As a follow up to the GAO study, the Board issued an RFP to study this and related issues, including
  - Assessment of competition and captivity
  - Capacity and investment
  - Service quality
  - Policy proposals
- ❑ The Christensen Associates team was selected to conduct an independent, rigorous study

# Requirements from the Board's RFP

- ❑ Initial qualitative research phase
  - Stakeholder input
- ❑ Quantitative research phase
  - Develop quantitative research plan
  - Assess competition and capacity issues
  - Investigate impact of competition and capacity constraints on service quality
  - Analyze economics of proposed policy reforms
- ❑ Prepare Final Report

# Project Timeline

- ❑ Phase 1- Qualitative Research
  - Through Spring (Complete)
- ❑ Phase 2 - Quantitative Analysis
  - Now through Summer (Ongoing)
- ❑ Phase 3 – Report
  - August through October

Final Report November 1, 2008

# *What We Have Done* Qualitative Research

- ❑ Interviews and other stakeholder feedback
- ❑ Institutional research
- ❑ Presentations and meetings
- ❑ Summary of qualitative research findings will be a chapter in our Final Report

# Stakeholder Input Process

- ❑ Input from various stakeholders, including
  - Shippers
  - Railroads
  - Industry analysts
  - Policy makers and regulators
  - Other interested parties
  
- ❑ Input obtained through various means
  - Over 60 interviews (in-person and phone)
  - Electronic forum on our website
  - Written comments via e-mail

# Use of Stakeholder Input

- ❑ Findings from qualitative phase of project used in formulating empirical research questions
- ❑ We gained tremendous knowledge and insights
  - Perspectives on the workings of the industry
  - Perspectives on policy issues
- ❑ We thoroughly considered all input received
- ❑ In Final Report, we will summarize qualitative findings, including those where
  - Issues are outside the scope of our study
  - Data limitations prevented thorough examination

# *What We Have Done*

## Quantitative Analysis

- ❑ Specify research issues and empirical methods
  - Incorporate qualitative research findings
  - Literature search and review
- ❑ Data collection
  - Complete for “primary” datasets
- ❑ Research plan
  - Our “roadmap” for what we are currently doing and will be doing throughout the summer

# *What We Are Doing* Quantitative Research Plan

- ❑ Macro overview of industry
- ❑ Econometric analysis
  - Industry cost structure
  - Disaggregate pricing model
- ❑ Primary research issues
  - Identification of captivity
  - Existence and exercise of market power
  - Factors affecting service quality
  - Factors affecting capacity and investment behavior
  - Economic analysis of policy proposals

# Macro Overview

- ❑ Purpose - set the stage for quantitative analysis, provide context
- ❑ Starting point is reconstruction and update of GAO analysis
- ❑ We are extending GAO analysis in two important respects
  - Use of alternative price index methods (e.g., BLS) and examination of differences
  - Develop economic measures of shipper captivity

# Macro Overview

- ❑ In addition to rate and captivity trends we are examining
  - Industry input price and productivity trends relative to rate trends
  - Industry profitability trends relative to financial benchmarks
  
- ❑ We are also examining these macro trends relative to our quantitative results, including
  - Capacity and investment
  - Cost characteristics (e.g., economies of density)

# Econometric Analysis

- ❑ Two types of models in economic literature
  - Industry cost function estimated with R-1 data
  - Disaggregate pricing model estimated with Waybill data
- ❑ Industry cost function
  - Cost/production characteristics of industry
    - Account for firm-specific effects
  - Test for various economies – scale, scope, density
  - Insights into economically feasible market structures
- ❑ Disaggregate pricing model
  - By O-D pair, commodity, etc.
  - Investigate pricing in specific markets

# Econometric Analysis

- ❑ Each type of model has limitations
  - Industry cost function of limited use for market-specific analysis
  - Disaggregate pricing model limited by need to make assumptions on firm's cost characteristics
- ❑ One of our innovations is attempt to synthesize models to address these limitations
  - Develop methods to produce estimates of commodity-specific marginal costs
  - This will allow market-specific analysis of market power issues and effects of proposed policy reforms

# Econometric Analysis

- ❑ Differences from prior studies
  - Use of confidential, unmasked Waybill data to “drill down” to shipment-specific analysis
  - Supplementing rail data with Geographic Information Systems (GIS) and other data
    - Extensive mapping capabilities
  - Market definitions down to county level (and often lower)
  - Synthesize modeling approaches
- ❑ Enhancements to our econometric analysis
  - We are making liberal use of maps, charts, graphs
  - We may also use case study approach

# Service Quality

- ❑ Proposed research questions included
  - Current state and trends in service quality
  - Impact of capacity constraints on service quality
  - Relationship of competition and market power to service quality
- ❑ We have heard a lot about service quality performance (and it will be in Final Report)
  - Over time
  - Relative to price, captivity
- ❑ However, rigorous empirical investigation of these issues is limited by lack of available data

# Service Quality – Data Limitations

- ❑ Primary data set is weekly Rail Performance Reports
  - We have complete panel back to 1999 for each reporting Class 1
  - Primary measures are terminal dwell time and train speed
- ❑ Other possibilities
  - R-1 schedule 720, Track and Traffic Conditions
  - Case study approach
- ❑ It has been suggested to us that the Board should require reporting of service metrics that many shippers and railroads keep

# Capacity and Investment

- ❑ Two general approaches to evaluate railroad capacity and utilization
  - Transportation flow modeling (e.g., Cambridge Systematics study)
    - Advantage of detailed view of network
    - But no account of economic incentives that affect capacity and demand
  - Econometric modeling of cost functions
    - Advantage of accounting for economic incentives
    - But largely limited to macro, network-wide view

# Capacity and Investment

- ❑ We are relying primarily on cost function approach
  - We will attempt to apply at more disaggregate level
- ❑ “Capacity equation” derived from cost function results
  - Comparison of investment’s value of marginal product to its market price (“Tobin’s q”)
  - Indicator of investment incentive
  - Indicator of shortage, excess or optimal capacity
  - Explicitly recognizes capacity depends on substitutability of other inputs and technology

# Capacity and Investment

- Augment with other information and analysis
  - Identify and analyze select congestion points and corridors. For example:
    - Chicago
    - PRB corridors (West) and I80 corridor (East)
  - Elements of Cambridge Systematics study
  - Evaluation of demand projections to assess future needs
  - Extensive use of maps, charts, etc

# Economic Analysis of Policy Proposals

- ❑ Board RFP requests analysis of proposals mentioned in GAO study
  - Reciprocal switching, terminal agreements, trackage rights, bottleneck rates, paper barriers
  - STB reforms
    - Increased use of simplified guidelines and arbitration
    - Alternative cost methodology to SAC
  - Other potential candidates
    - Investment tax credit

# Economic Analysis of Policy Proposals

- ❑ Focus of economic policy analysis is to assess economic benefits and costs
  - Effect on economic efficiency
  - Measurement of distributional effects
  - Per RFP, GAO – examine effects on railroad profitability and investment incentives
  - No judgment on equity effects
- ❑ Our assignment is to evaluate, not recommend proposals
  - Provide meaningful information for policy debates

# Economic Analysis of Policy Proposals

- ❑ Our quantitative analysis provides a basis for assessing industry structure and performance, including
  - Extent of captivity
  - Extent and exercise of market power
  - Industry production technology and cost structure
  - Investment requirements and incentives
- ❑ This assessment provides an initial “filter” for evaluating economic effects of proposals

# Economic Analysis of Policy Proposals

- ❑ Our evaluation of economic effects will consider
  - Our assessment of industry structure and performance – i.e., the “filter”
  - Simulations based on our empirical results
    - Price and output effects (i.e., economic efficiency)
    - Distributional effects (i.e., shippers and railroads)
    - Investment incentives
  - Results and/or inputs from other analyses

# Recommendations for Future Research and/or Data Collection

- ❑ We are compiling a list of important issues that merit further study
  - Some are outside the scope of our study
  - For some, data are not available to adequately analyze
  
- ❑ Examples of important issues where analysis is limited by data availability
  - Service quality
  - Cost shifting
  - Shipper access to rail networks

# Summary

- ❑ Our research agenda includes
  - Ambitious set of questions
  - Implementation of methodological innovations
- ❑ We are in the process of estimating econometric models
  - We are linking this analysis to unique, detailed geographic analysis of shipments
- ❑ A number of people and organizations have been extremely helpful and cooperative

# Summary

- ❑ Our primary goal: produce an academic-quality study that is a useful tool for all stakeholders
  - Theoretically rigorous
  - Accessible and meaningful to non-economists
    - Liberal use of maps, charts, graphs
    - We may also make use of case study approach
- ❑ Application to policy analysis is a critical aspect of this goal

# Study Website

[www.LRCA.com/railroadstudy](http://www.LRCA.com/railroadstudy)

- ❑ Allows project team to provide information to stakeholders about the study
- ❑ Allows stakeholders to provide information to the project team
  - Electronic forum and e-mail access to study team